MODIS sensor Working Group (MsWG) Meeting Summary November 2, 2005

Attendance: Joe Auchter, Bill Barnes, Stuart Biggar, Vincent Chiang, Roger Drake, Gene Eplee, Gerhard Meister, Chris Moeller, Vincent Salomonson, Junqiang Sun, Gary Toller, Eric Vermote, Zhengming Wan, Aisheng Wu, Xiaobo Xie, Jack Xiong

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Scheduled Agenda

Item 1: Recent L1B LUT delivery

- Aqua collection 4 forward update – V4.3.1.22 (Oct 21) to DAAC.
- Aqua collection 5 forward update – V5.0.7.6 (Oct 24) to DAAC.

Item 2: Instrument status

- Terra and Aqua MODIS are in normal operations.
- Aqua experienced data loss on 2005/291 (Oct 18) from 09:43 to 10:47 due to operator's error.

Item 3: Aqua SWIR BBR Phase Delay

EV – Recommends the phase delay (~ *250-300m*) in along-scan direction and shift 1 raw (*500m*) of SWIR bands 5-7 data in along-track direction in L1B.

JX – At the beginning I thought we should do it after we have done SRCA's analysis. But it's not as simple as I originally thought. Joe and Roger might have specific plan for the phase delay in along-scan direction. I also believe the commend change in configuration needs HQ's approval.

RD – It is not just one or two single factors to upload to the flight software. Joe and I have shown that in the thermal vacuum test. This requires completing significant amount of code change and reprogramming into the writeable control unit of the single board computer formatter engine. It would probably require resetting formatter and other issue like stopping the scan mirror and (also talked to Neil Therrien) to be very careful about shifting in the right direction.

JA – It will lose few seconds of data while we are uploading the change into the double-EPROM (EEPROMs). It does not need to stop scan mirror but cannot do it when formatter engine is operating. In the SRCA test, it actually moved the SRCA sector. There is no way to change the timing for just one band.

BB – Questions about registration and how small in resolution it can change.

JA – Not sure how small in sub-pixel, but it's easier to change by one pixel.

JX/RD – There are limits in the amount of delay for sampling and data output.

VS – I am concerned about how to propose to HQ. Can you characterize the risk of doing the phase delay? And how much time do you need?

RD – It would be one or two months, all depends what to be proposed. We are not doing something we are not able to back up. My biggest concern is the instrument stability. I just let you know how everything will be involved before we go too far or if we decide to change that.

EV – The (along-scan) registration shift is there. I would see if we can improve it. And I am getting more concerns about VIIRS too. The problem is that we can not track it on orbit. There is no SCRA on VIIRS.

RD – VIIRS has different architect in data package that will have single band data package, rather than having all (36) bands together like MODIS. It does not involve that much to change (phase delay) like MODIS. It is true we don't have SRCA to track BBR on VIIRS but there are other ways to do it.

EV – The other question, for Jack, is the along-track shift in L1B.

JX – It's not easy for 1km bands to shift 500m, but it is doable in 500m bands. We need to make sure with the leading/trailing granules issue. Single granule will not have problem. We can do some L1B test.

JX/CM – And also the SWIR bands correction issue in L1B.

VS/JX – This will involve PCR process. Maybe this can be presented in Science Team Meeting.

CM – Thinking about the whole process, I would suggest Eric put the module in Level 2 product front end to make sure it improves while we continue to wait for the final approval. (Eric will send BBR presentation to Vince.)

Around the Table

Participant: **Chris Moeller** – On the TEB warm-up/cool-down coefficients

To Roger: We did a large scale 170-340K pre-launch calibration to estimate a0 and a2. We see in the test the difference between applying the per-launch and on-orbit coefficients. If you use one set of coefficients (quarterly, every 3 months) and apply them to next quarter data, the brightness temperature will bounce around, suggesting that a0 term changes. I would feel more comfortable if the cool-down coefficient is close to pre-launch value.

RD – I would look at the coefficient and uncertainty we fit on-orbit 270-315K. And compare the uncertainty in fitted parameters to pre-launch TV uncertainty. I have confidence in pre-launch calibration if the on-orbit uncertainty falls into the pre-launch values.
JX – It is really the a0 term that causes large difference in low temperature range. The pre-launch calibration was using high quality Blackbody Calibration Source (BCS), only Scan mirror and BCS were involved in calibration. On-orbit calibration, there is cavity term involved in the Blackbody (BB) term that is not very well characterized pre-launch.
RD – Getting a handle on cavity term is very challenging according to Jim Young. One could check the a0 value and see what temperature could match that term that would give some confidence in cavity term estimation.

Next MsWG meeting scheduled on November 16, 2005